



Lightweight Zylon Helmet

Overview:

Lightweight Zylon Helmets development work is being conducted as part of the Human Systems Defense Technology Objective for Ballistic Protection for Improved Soldier Survivability. Among the objectives of that work is the development of fragmentation protective armor with substantially reduced weight providing the same protection. Cost, durability, environmental stability, manufacturability and ballistic impact performance are each given consideration as part of the work.

Description:

Unidirectional thermoplastic resin prepreg materials were prepared using 500 denier Zylon yarns and consolidated (using compression molding) into both flat panels and helmets. Ballistic impact performance and areal density requirements for equivalent performance to the PASGT helmet were established using flat panels (indicated below).

	<i>PASGT</i>	<i>Zylon</i>
Shell Weight (lb):	3.0	1.79
Armor Areal Density (psf):	2.38	1.6
Area of Coverage (ft ²):	1.26	1.12
Fiber:	Kevlar 29	Zylon
Yarn Denier:	1500	500
Fiber Architecture:	Basket Weave Fabric	Unidirectional

Status:

Additional work to optimize molding conditions for helmets and to enhance durability and helmet flexural rigidity are underway. The use of less expensive 1000 denier Zylon yarns to produce the unidirectional prepreg materials used in the helmets will also be investigated.

Point of Contact:

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